

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) A heat exchanger, in particular oil cooler, for motor vehicles, the heat exchanger being formed from interconnected plates, there being formed between the plates cavities which are closed off outwardly and through which a first and a second medium flow alternately in each case via at least one inflow line and outflow line, the plates being profiled in such a way that, between the respective profiles of the plates, contact points occur, in the region of which the plates are fastened to one another, ~~characterized in that~~ wherein the profiles of the plates (10) and their contact points are designed in such a way that the flow, formed between the plates (10), of the first and the second medium from the corresponding inflow line to the corresponding outflow line does not run rectilinearly.
2. (Currently amended) The heat exchanger as claimed in claim 1, ~~characterized in that~~ wherein the plates (10) have a recurring wavy profile (12) which extends essentially transversely with respect to the main throughflow direction (H) and, in particular, is waved in a zigzag-shaped manner around the direction of extent.
3. (Currently amended) The heat exchanger as claimed in ~~one of the preceding claims,~~ ~~characterized in that~~ claim 1, wherein the wavy profile (12) has legs (14) running rectilinearly between regions of curvature, the wavy profile (12) being characterized by the leg length (15) of the legs (14), by the leg angle (13) defined between the legs (14) and by the profile depth of the wavy profile.
4. (Currently amended) The heat exchanger as claimed in ~~one of the preceding claims,~~ ~~characterized in that~~ claim 1, wherein the configuration of the wavy profile is characterized by the run of the profile in the region of the legs and of the regions of curvature, profiles adjacent to one another recurring in a predetermined division.

(Currently amended) The heat exchanger as claimed in ~~one of the preceding claims,~~
~~characterized in that~~ claim 1, wherein the wavy profile has a flat region on the outside of a
wave back.

6. (Currently amended) The heat exchanger as claimed in ~~one of the preceding claims,~~
~~characterized in that~~ claim 1, wherein the flat region is between 0.1 mm and 0.4 mm in a
cross section of the wavy profile.

7. (Currently amended) The heat exchanger as claimed in ~~one of the preceding claims,~~
~~characterized in that~~ claim 1, wherein the leg angle ~~(13)~~ is preferably between 45° and 135°,
preferably around 90°.

8. (Currently amended) The heat exchanger as claimed in ~~one of the preceding claims,~~
~~characterized in that~~ claim 1, wherein the profile depth is between 0.3 mm and 2 mm, in the
case of liquid media preferably between 0.5 mm and 1 mm and, in particular, between
0.7 mm and 0.8 mm, and, in the case of gaseous media, is preferably in the range between
0.6 mm and 2 mm and, in particular, around 1.5 mm.

9. (Currently amended) The heat exchanger as claimed in ~~one of the preceding claims,~~
~~characterized in that~~ claim 1, wherein the leg length ~~(15)~~ is in the range of 8 mm to 15 mm
and, in particular, in the range of 9 mm to 12 mm.

10. (Currently amended) The heat exchanger as claimed in ~~one of the preceding claims,~~
~~characterized in that~~ claim 1, wherein the wavy profile ~~(12)~~ is designed as an embossing in
the plate ~~(10)~~, the plates ~~(10)~~ consisting preferably of a metallic material, in particular
aluminum, the plates preferably being coated on at least one side with soldering aid material.

11. (Currently amended) The heat exchanger as claimed in ~~one of the preceding claims,~~
~~characterized in that~~ claim 1, wherein the plates ~~(10)~~ have as inflow lines and outflow lines in
each case a pair of bores ~~(18)~~ perpendicularly with respect to the plate plane, the bores ~~(18)~~

being raised with respect to the basic plane in such a way that there is a fluidic connection from one of the two bores alternately only to every second plate interspace (20).

12. (Currently amended) The heat exchanger as claimed in ~~one of the preceding claims, characterized in that~~ claim 1, wherein the raised region of at least some of the bores is surrounded by a region preferably leading around annularly and free of wavy profile.

13. (Currently amended) The heat exchanger as claimed in ~~one of the preceding claims, characterized in that in,~~ claim 1, wherein the region of the bores (18) assigned to the inflow lines, distributor ducts (23) are provided, which are defined preferably by a wavy profile (12) with a leg angle which is increased, as compared with the leg angle of the wavy profile.

14. (Currently amended) The heat exchanger as claimed in ~~one of the preceding claims, characterized in that~~ claim 1, wherein the bores assigned to the inflow lines are oval, elliptical or rectangular.

15. (Currently amended) The heat exchanger as claimed in ~~one of the preceding claims, characterized in that~~ claim 1, wherein two plates (10) different from one another in terms of the wavy profile (12) are used alternately, the wavy profiles (12) differing from one another at least in terms of one of the features comprising leg length (15), leg angle (13) and profile depth.

16. (Currently amended) The heat exchanger as claimed in ~~one of the preceding claims, characterized in that~~ claim 1, wherein the wavy profile (12) of one side of the plate (10) differs from the wavy profile (12) of the other side of the plate (10) at least in terms of one of the features comprising leg length (15), leg angle (13) and profile depth.

17. (Currently amended) The heat exchanger as claimed in ~~one of the preceding claims, characterized in that~~ claim 1, wherein the wavy profiles of adjacent plates are identical to one another.

18. (Currently amended) The heat exchanger as claimed in ~~one of the preceding claims,~~ characterized in that claim 1, wherein the heat exchanger is formed from a stack (21) of plates (10), the plates (10) corresponding to one another and being arranged so as to be rotated alternately through 180° with respect to one another.

19. (Currently amended) The heat exchanger particularly as claimed in ~~one of the preceding claims,~~ characterized in that claim 1, wherein the plates (10) have a bent edge (17), the edges (17) of adjacent plates (10) bearing one against the other and preferably being connected to one another by brazing.

20. (Currently amended) The heat exchanger as claimed in ~~one of the preceding claims,~~ characterized in that claim 1, wherein the bent edges (17) of a plurality of, in particular of up to five plates (10) mutually overlap.

21. (Currently amended) The heat exchanger as claimed in ~~one of the preceding claims,~~ characterized in that claim 1, wherein the wavy profile (12) extends into the edge (17), in particular over the edge (17).

22. (Currently amended) The heat exchanger as claimed in ~~one of the preceding claims,~~ characterized in that, claim 1, wherein between the end of the wavy profile and the edge, a profile-free bending portion is formed, the width of which is smaller than 2 mm and is preferably determined in such a way that, during the brazing of the plates, the bending region is blocked with solder in wave crest portions in such a way that a throughflow of medium in the bending portion is reduced or essentially prevented.

23. (Currently amended) The heat exchanger as claimed in ~~one of the preceding claims,~~ characterized in that claim 1, wherein at least one end face of the heat exchanger is assigned a closing plate (24) which is profileless, in particular, at least on the outside and which preferably has connection points (25) for a first and second medium, said connection points issuing into connecting lines and being arranged in alignment with the bores (18).

24. (Currently amended) The heat exchanger as claimed in ~~one of the preceding claims, characterized in that~~ claim 1, wherein the hydraulic diameter (hD) in the main direction of extent (D) has a fluctuation of at most 25%, in particular at most 15%, in particular at most 10%, around an average value.

25. (Currently amended) The heat exchanger as claimed in ~~one of the preceding claims, characterized in that~~ claim 1, wherein the hydraulic diameter (hD) has an average value of between 1 mm and 4 mm, and, in the case of liquid media, it is preferably 1 mm and 2 mm and preferably around 1.4 mm, and, in the case of gaseous media, preferably around 3 mm.

26. (Currently amended) The heat exchanger as claimed in ~~one of the preceding claims, characterized in that~~ claim 1, wherein the contact points between two plates adjacent to one another are distributed uniformly over the plate surface.

27. (Currently amended) The heat exchanger as claimed in ~~one of the preceding claims, characterized in that~~ the contact points between two plates adjacent to one another have a surface density of 4 to 7 per cm², in particular of 5 to 6 per cm².

28. (Currently amended) The heat exchanger as claimed in ~~one of the preceding claims, characterized in that~~ claim 1, wherein a phase transition of a medium takes place in plate interspaces.

29. (Currently amended) The heat exchanger as claimed in ~~one of the preceding claims, characterized in that~~ claim 1, wherein the installation position of the heat exchanger is determined such that the transverse distribution of the medium in the plate interspaces is assisted by gravitation.

30. (Currently amended) A method for the production of a heat exchanger particularly as claimed in ~~one of the preceding claims, characterized in that~~ claim 1, wherein the method comprises, in particular, the steps of embossing the plates (10), of stacking the plates (10) one on the other and of fastening them to one another, preferably by brazing.

31. (Currently amended) The method as claimed in claim 30, ~~characterized in that~~
wherein the stacking of the plates one on the other takes place such that two adjacent plates
(10) are in each case rotated through 180 degrees with respect to one another.

32. (Currently amended) The method as claimed in claim ~~30 or 31, characterized in that~~
30, wherein brazing takes place in such a way that the plates (10) are connected sealingly to
one another at their edge, a connection of adjacent plates (10) to one another at contact points
of wavy profiles (12) preferably taking place at the same time.